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☐	L1	ketopantoate hydroxymethyltransferase	29

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Search Results - Record(s) 1 through 20 of 29 returned.

☐ 1. Document ID: US 20040152173 A1

Using default format because multiple data bases are involved.

L1: Entry 1 of 29 File: PGPB Aug 5, 2004

PGPUB-DOCUMENT-NUMBER: 20040152173
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040152173 A1

TITLE: Process for the fermentative preparation of d-pantothenic acid and/or salts thereof

PUBLICATION-DATE: August 5, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Thierbach, Georg	Bielefeld		DE	

US-CL-CURRENT: 435/106; 435/252.31

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 2. Document ID: US 20040146996 A1

L1: Entry 2 of 29 File: PGPB Jul 29, 2004

PGPUB-DOCUMENT-NUMBER: 20040146996
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040146996 A1

TITLE: Microorganisms and processes for enhanced production of pantothenate

PUBLICATION-DATE: July 29, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Yocum, R. Rogers	Lexington	MA	US	
Patterson, Thomas A.	North Attleboro	MA	US	
Pero, Janice G.	Lexington	MA	US	
Hermann, Theron	Kinnelon	NJ	US	

US-CL-CURRENT: 435/106; 435/252.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 3. Document ID: US 20040091979 A1

L1: Entry 3 of 29 File: PGPB May 13, 2004

PGPUB-DOCUMENT-NUMBER: 20040091979
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040091979 A1

TITLE: Microorganisms and processes for enhanced production of pantothenate

PUBLICATION-DATE: May 13, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Yocum, Rogers R.	Lexington	MA	US	
Patterson, Thomas A.	North Attleboro	MA	US	
Pero, Janice G.	Lexington	MA	US	
Hermann, Theron	Kinnelon	NJ	US	

US-CL-CURRENT: 435/106; 435/252.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 4. Document ID: US 20040086982 A1

L1: Entry 4 of 29 File: PGPB May 6, 2004

PGPUB-DOCUMENT-NUMBER: 20040086982
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040086982 A1

TITLE: Processes for enhanced production of pantothenate

PUBLICATION-DATE: May 6, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hermann, Theron	Kinnelon	NJ	US	
Patterson, Thomas A.	North Attleboro	MA	US	
Pero, Janice G.	Lexington	MA	US	
Yocum, R. Rogers	Lexington	MA	US	
Baldenius, Kai-Uwe	Ludwigshafen		DE	
Beck, Christine	Mannheim		DE	

US-CL-CURRENT: 435/106; 435/252.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 5. Document ID: US 20040072307 A1

L1: Entry 5 of 29 File: PGPB Apr 15, 2004

PGPUB-DOCUMENT-NUMBER: 20040072307
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040072307 A1

TITLE: Processes for enhanced production of pantothenate

PUBLICATION-DATE: April 15, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Beck, Christine	Max-Joseph-Str. 35 Mannheim		DE	
Harz, Hans-Peter	Dudenhofen		DE	

US-CL-CURRENT: 435/106; 562/553

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 6. Document ID: US 20040053385 A1

L1: Entry 6 of 29 File: PGPB Mar 18, 2004

PGPUB-DOCUMENT-NUMBER: 20040053385
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040053385 A1

TITLE: Crystal structure

PUBLICATION-DATE: March 18, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Blundell, Tom L.	Royston	CA	GB	
Abell, Christopher	Cambridge		GB	
Inoue, Tsuyoshi	Cambridge		GB	
Delft, Frank Von	San Diego		US	

US-CL-CURRENT: 435/193; 702/19, 703/11

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 7. Document ID: US 20040048343 A1

L1: Entry 7 of 29 File: PGPB Mar 11, 2004

PGPUB-DOCUMENT-NUMBER: 20040048343
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040048343 A1

TITLE: Method and microorganisms for the production of 3-(2-hydroxy-3-methyl-butyrylamino)-propionic acid (hmbpa)

PUBLICATION-DATE: March 11, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hermann, Theron	Kinnelon	NJ	US	
Patterson, Thomas A.	Attleboro	MA	US	
Pero, Janice G.	Lexington	MA	US	
Yocum, R. Rogers	Lexington	MA	US	
Baldenius, Kai-Uwe	Ludwigshafen		DE	
Beck, Christine	Mannheim		DE	

US-CL-CURRENT: 435/106; 435/252.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 8. Document ID: US 20040043037 A1

L1: Entry 8 of 29 File: PGPB Mar 4, 2004

PGPUB-DOCUMENT-NUMBER: 20040043037
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040043037 A1

TITLE: Staphylococcus aureus polynucleotides and sequences

PUBLICATION-DATE: March 4, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Kunsch, Charles A.	Norcross	GA	US	
Choi, Gil H.	Rockville	MD	US	
Barash, Steven	Rockville	MD	US	
Dillon, Patrick J.	Carlsbad	CA	US	
Fannon, Michael R.	Silver Spring	MD	US	
Rosen, Craig A.	Laytonsville	MD	US	

US-CL-CURRENT: 424/190.1; 435/252.3, 435/320.1, 435/69.3, 530/350, 536/23.7

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 9. Document ID: US 20040009569 A1

L1: Entry 9 of 29 File: PGPB Jan 15, 2004

PGPUB-DOCUMENT-NUMBER: 20040009569
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040009569 A1

TITLE: Kinase crystal structures and materials and methods for kinase activation

PUBLICATION-DATE: January 15, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Barford, David	London		GB	
Yang, Jing	Middlesex		GB	
Hemmings, Brian Arthur	Bettingen		CH	
Cron, Peter David	Basel		CH	

US-CL-CURRENT: 435/194; 702/19

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 10. Document ID: US 20040005687 A1

L1: Entry 10 of 29 File: PGPB Jan 8, 2004

PGPUB-DOCUMENT-NUMBER: 20040005687
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040005687 A1

TITLE: Kinase crystal structures

PUBLICATION-DATE: January 8, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Barford, David	London		GB	
Yang, Jing	Middlesex		GB	
Hemmings, Brian Arthur	Bettingen		CH	
Cron, Peter David	Basel		CH	

US-CL-CURRENT: 435/194; 702/19

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 11. Document ID: US 20030100081 A1

L1: Entry 11 of 29 File: PGPB May 29, 2003

PGPUB-DOCUMENT-NUMBER: 20030100081
PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030100081 A1

TITLE: Process for the preparation of D-pantothenic acid and/or salts thereof

PUBLICATION-DATE: May 29, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hermann, Thomas	Bielefeld		DE	
Witteck, Birgit	Dissen		DE	
Rieping, Mechthild	Bielefeld		DE	

US-CL-CURRENT: 435/106; 435/193, 435/252.33, 435/320.1, 435/69.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 12. Document ID: US 20030054436 A1

L1: Entry 12 of 29 File: PGPB Mar 20, 2003

PGPUB-DOCUMENT-NUMBER: 20030054436
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030054436 A1

TITLE: STAPHYLOCOCCUS AUREUS POLYNUCLEOTIDES AND SEQUENCES

PUBLICATION-DATE: March 20, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
KUNSCH, CHARLES A.	GAITHERSBURG	MD	US	
CHOI, GIL A.	ROCKVILLE	MD	US	
BARASH, STEVEN C.	ROCKVILLE	MD	US	
DILLON, PATRICK J.	GAITHERSBURG	MD	US	
FANNON, MICHAEL R.	SILVER SPRING	MD	US	
ROSEN, CRAIG A.	LAYTONSVILLE	MD	US	

US-CL-CURRENT: 435/69.1; 435/252.3, 435/320.1, 536/23.1, 536/23.7

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 13. Document ID: US 20020173010 A1

L1: Entry 13 of 29 File: PGPB Nov 21, 2002

PGPUB-DOCUMENT-NUMBER: 20020173010
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020173010 A1

TITLE: Process for preparation of D-pantothenic acid and/or salts thereof

PUBLICATION-DATE: November 21, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Rieping, Mechthild	Bielefeld		DE	

US-CL-CURRENT: 435/106; 435/252.33

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

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☐ 14. Document ID: US 20020164602 A1

L1: Entry 14 of 29 File: PGPB Nov 7, 2002

PGPUB-DOCUMENT-NUMBER: 20020164602
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020164602 A1

TITLE: High throughput screen for inhibitors of the folate biosynthetic pathway in bacteria

PUBLICATION-DATE: November 7, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Murphy, Christopher K.	Upton	MA	US	

US-CL-CURRENT: 435/6; 435/32, 435/7.32

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

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☐ 15. Document ID: US 20020120116 A1

L1: Entry 15 of 29 File: PGPB Aug 29, 2002

PGPUB-DOCUMENT-NUMBER: 20020120116
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020120116 A1

TITLE: ENTEROCOCCUS FAECALIS POLYNUCLEOTIDES AND POLYPEPTIDES

PUBLICATION-DATE: August 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
KUNSCH, CHARLES A.	ATLANTA	GA	US	
DILLON, PATRICK J.	CARLSBAD	CA	US	
BARASH, STEVEN	ROCKVILLE	MD	US	

US-CL-CURRENT: 536/23.2; 435/252.3, 435/320.1, 435/69.1, 435/70.1, 435/71.1,

530/350, 530/387.9, 800/13

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 16. Document ID: US 20020076770 A1

L1: Entry 16 of 29 File: PGPB Jun 20, 2002

PGPUB-DOCUMENT-NUMBER: 20020076770
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020076770 A1

TITLE: Process for the fermentative preparation of D-pantothenic acid using Coryneform bacteria

PUBLICATION-DATE: June 20, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Dusch, Nicole	Werther		DE	
Thierbach, Georg	Bielefeld		DE	

US-CL-CURRENT: 435/106; 435/252.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 17. Document ID: US 20020068335 A1

L1: Entry 17 of 29 File: PGPB Jun 6, 2002

PGPUB-DOCUMENT-NUMBER: 20020068335
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020068335 A1

TITLE: Processes for preparing D-pantothenic acid using coryneform bacteria

PUBLICATION-DATE: June 6, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Thierbach, Georg	Bielefeld		DE	
Dusch, Nicole	Werther		DE	

US-CL-CURRENT: 435/106; 435/252.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 18. Document ID: US 20020042104 A1

L1: Entry 18 of 29 File: PGPB Apr 11, 2002

PGPUB-DOCUMENT-NUMBER: 20020042104
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020042104 A1

TITLE: Process for the fermentative preparation of D-pantothenic acid using coryneform bacteria

PUBLICATION-DATE: April 11, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Dusch, Nicole	Bielefeld		DE	
Thierbach, Georg	Bielefeld		DE	

US-CL-CURRENT: 435/106; 435/194, 435/252.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw D

☐ 19. Document ID: US 6787334 B1

L1: Entry 19 of 29 File: USPT Sep 7, 2004

US-PAT-NO: 6787334
DOCUMENT-IDENTIFIER: US 6787334 B1

TITLE: Process for the preparation of pantothenic acid by amplification of nucleotide sequences which code for the ketopantoate reductase

DATE-ISSUED: September 7, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Elischweski; Frank	Leopoldshohe			DE
Kalinowski; Jorn	Bielefeld			DE
Puhler; Alfred	Bielefeld			DE
Dusch; Nicole	Bielefeld			DE
Dohmen; Jurgen	Meerbusch			DE
Farwick; Mike	Bielefeld			DE
Thierbach; Georg	Bielefeld			DE

US-CL-CURRENT: 435/69.1; 435/252.3, 435/252.33, 435/320.1, 435/471, 435/6, 536/23.1

ABSTRACT:

The invention relates to a process for the preparation and improvement of D-pantothenic acid-producing microorganisms by amplification of nucleotide sequences which code for ketopantoate reductase, in particular the panE gene, individually or in combination with one another, and optionally additionally of the ilvC gene, the microorganisms containing these nucleotide sequences, and a process for the preparation of D-pantothenic acid comprising fermentation of these microorganisms, concentration of pantothenic acid in the medium or in the cells of the

microorganisms, and isolation of the D-pantothenic acid.

26 Claims, 9 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 9

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw. D

☐ 20. Document ID: US 6667166 B2

L1: Entry 20 of 29 File: USPT Dec 23, 2003

US-PAT-NO: 6667166
DOCUMENT-IDENTIFIER: US 6667166 B2

TITLE: Processes for preparing D-pantothenic acid using coryneform bacteria

DATE-ISSUED: December 23, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thierbach; Georg	Bielefeld			DE
Dusch; Nicole	Werther			DE

US-CL-CURRENT: 435/106; 435/183, 435/194, 435/252.3, 435/320.1

ABSTRACT:

The present invention provides processes for preparing D-pantothenic acid using Coryneform bacteria having an enhanced pfkA gene.

16 Claims, 2 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw. D

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Terms	Documents
ketopantoate hydroxymethyltransferase	29

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Search Results - Record(s) 21 through 29 of 29 returned.

☐ 21. Document ID: US 6184007 B1

Using default format because multiple data bases are involved.

L1: Entry 21 of 29 File: USPT Feb 6, 2001

US-PAT-NO: 6184007
DOCUMENT-IDENTIFIER: US 6184007 B1

TITLE: Method for the fermentative production of D-pantothenic acid by enhancement of the panD gene in microorganisms

DATE-ISSUED: February 6, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dusch; Nicole	Blelefeld			DE
Kalinowski; Jorn	Blelefeld			DE
Puhler; Alfred	Blelefeld			DE

US-CL-CURRENT: 435/128; 435/252.3, 435/252.32, 435/252.33, 435/254.11, 435/320.1, 435/325, 435/419, 536/23.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 22. Document ID: US 6177264 B1

L1: Entry 22 of 29 File: USPT Jan 23, 2001

US-PAT-NO: 6177264
DOCUMENT-IDENTIFIER: US 6177264 B1

TITLE: Method for the fermentative production of D-pantothenic acid using Coryneform bacteria

DATE-ISSUED: January 23, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Eggeling; Lothar	Julich			DE
Thierbach; Georg	Bielefeld			DE
Sahm; Hermann	Julich			DE

US-CL-CURRENT: 435/128; 435/252.3, 435/252.32, 435/252.33, 435/254.11, 435/320.1, 435/325, 435/419, 536/23.1, 536/23.2

ABSTRACT:

The invention discloses three polynucleotide sequences for the fermentative production of D-pantothenic acid. These polynucleotide sequences are genes named panB, encoding a ketopantoate hydroxymethyltransferase, panC, encoding pantothenate synthase, and ilvD, encoding dihydroxy-acid dehydratase. The genes panB and panC are found on the same operon, panBC, while the gene ilvD is found in a separate operon. These genes can be used separately or together to enhance the production of D-pantothenic acid in microorganisms, especially in Corynebacterium.

25 Claims, 3 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

☐ 23. Document ID: US 6171845 B1

L1: Entry 23 of 29 File: USPT Jan 9, 2001

US-PAT-NO: 6171845
DOCUMENT-IDENTIFIER: US 6171845 B1

TITLE: Mutant E. coli kiz strains for production of pantothenic acid

DATE-ISSUED: January 9, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Elischweski; Frank	Leopoldshohe			DE
Kalinowski; Jorn	Bielefeld			DE
Puhler; Alfred	Bielefeld			DE
Dusch; Nicole	Bielefeld			DE
Dohmen; Jurgen	Meerbusch			DE
Farwick; Mike	Bielefeld			DE
Thierbach; Georg	Bielefeld			DE

US-CL-CURRENT: 435/252.33

ABSTRACT:

The invention relates to a process for the preparation and improvement of D-pantothenic acid-producing microorganisms by amplification of nucleotide sequences which code for ketopantoate reductase, in particular the panE gene, individually or in combination with one another, and optionally additionally of the ilvC gene, the microorganisms containing these nucleotide sequences, and a process for the preparation of D-pantothenic acid comprising fermentation of these microorganisms, concentration of pantothenic acid in the medium or in the cells of the microorganisms, and isolation of the D-pantothenic acid.

2 Claims, 9 Drawing figures
Exemplary Claim Number: 2
Number of Drawing Sheets: 9

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw. D

☐ 24. Document ID: US 5518906 A

L1: Entry 24 of 29 File: USPT May 21, 1996

US-PAT-NO: 5518906
DOCUMENT-IDENTIFIER: US 5518906 A

TITLE: Production of d-pantoic acid and d-pantothenic acid

DATE-ISSUED: May 21, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hikichi; Yuichi	Suita			JP
Moriya; Takeo	Suita			JP
Miki; Hiroshi	Kobe			JP
Yamaguchi; Takamasa	Kobe			JP
Nogami; Ikuo	Nagaokakyo			JP

US-CL-CURRENT: 435/116; 435/183, 435/320.1, 435/69.1, 435/71.1, 435/71.2

ABSTRACT:

A method of producing D-pantothenic acid or a salt thereof characterized by bring a microbe belonging to the family Enterobacteriaceae having resistance to salicylic acid and capable of producing D-pantothenic acid in the presence of .beta.-alanine in contact with .beta.-alanine, preferably wherein a microbe resistant to .alpha.-ketoisovaleric acid and/or .alpha.-ketobutyric acid, and/or .alpha.-aminobutyric acid and/or .beta.-hydroxy-aspartic acid and/or O-methyl-threonine or a microbe transformed with a plasmid DNA carrying the region of a gene involved in biosynthesis of pantothenic acid or a salt thereof or a part thereof, is used, and a method of producing D-pantoic acid or a salt thereof characterized by culturing a microbe resistant to salicylic acid, .alpha.-ketoisovaleric acid and/or .alpha.-ketobutyric acid and/or .alpha.-aminobutyric acid and/or .beta.-hydroxy-aspartic acid and/or O-methyl-threonine and capable of producing D-pantoic acid to accumulate D-pantoic acid or a salt thereof, which is then harvested, and in accordance with these methods, D-pantothenic acid, D-pantoic acid or salts thereof can be efficiently directly obtained microbiologically without using DL-pantoic acid, DL-pantolactone etc. as starting materials.

6 Claims, 1 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw. D

☐ 25. Document ID: WO 2079460 A2

L1: Entry 25 of 29 File: EPAB Oct 10, 2002

PUB-NO: WO002079460A2
DOCUMENT-IDENTIFIER: WO 2079460 A2
TITLE: CRYSTAL STRUCTURE

PUBN-DATE: October 10, 2002

INVENTOR-INFORMATION:

NAME	COUNTRY
BLUNDELL, TOM LEON	GB
ABELL, CHRISTOPHER	GB
INOUE, TSUYOSHI	JP
VON, DELFT FRANK	US

INT-CL (IPC): C12 N 9/00
EUR-CL (EPC): C12N009/10

ABSTRACT:

CHG DATE=20021101 STATUS=O>The invention provides a crystal of ketopantoate hydroxymethyltransferase (KPHMT). The crystal may be characterised by the three dimensional atomic coordinates of Table 1. The invention also provides the use of such crystals and the Table of coordinates in computer modelling applications, for example in drug discovery.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw De

☐ 26. Document ID: AU 2002251191 A1, WO 200279460 A2, EP 1373482 A2, US 20040053385 A1

L1: Entry 26 of 29 File: DWPI Oct 15, 2002

DERWENT-ACC-NO: 2003-148257
DERWENT-WEEK: 200432

TITLE: Novel crystal of ketopantoate hydroxymethyltransferase, including crystals of selenium atom ketopantoate hydroxymethyltransferase derivatives, useful for rational drug design

INVENTOR: ABELL, C; BLUNDELL, T L ; INOUE, T ; VON DELFT, F ; DELFT, F V

PRIORITY-DATA: 2001US-0820745 (March 30, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
AU 2002251191 A1	October 15, 2002		000	C12N009/00

WO 200279460 A2	October 10, 2002	E	367	C12N009/00
EP 1373482 A2	January 2, 2004	E	000	C12N009/10
US 20040053385 A1	March 18, 2004		000	C12N009/10

INT-CL (IPC): C12 N 9/00; C12 N 9/10; G06 F 17/50; G06 F 19/00; G06 G 7/48; G06 G 7/58

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 27. Document ID: CN 1496400 A, WO 200257476 A2, EP 1377662 A2, US 20040048343 A1, AU 2002241944 A1, KR 2004004495 A

L1: Entry 27 of 29 File: DWPI May 12, 2004

DERWENT-ACC-NO: 2002-608383
DERWENT-WEEK: 200452

TITLE: Preparation of 3-(2-hydroxy-3-methyl-butyrylamino)-propionic acid useful for synthesizing hydroxy methyl glutarate CoA reductase inhibitors, involves culturing a microorganism under suitable conditions and detecting or isolating product

INVENTOR: BALDENIUS, K; BECK, C ; HERMANN, T ; PATTERSON, T A ; PERO, J G ; YOCUM, R R ; ROGERS, R Y

PRIORITY-DATA: 2001US-263053P (January 19, 2001), 2003US-0466642 (July 18, 2003)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
CN 1496400 A	May 12, 2004		000	C12N009/02
WO 200257476 A2	July 25, 2002	E	080	C12P013/02
EP 1377662 A2	January 7, 2004	E	000	C12N009/02
US 20040048343 A1	March 11, 2004		000	C12P013/04
AU 2002241944 A1	July 30, 2002		000	C12P013/02
KR 2004004495 A	January 13, 2004		000	C12P013/02

INT-CL (IPC): C12 N 1/21; C12 N 9/02; C12 N 15/03; C12 N 15/52; C12 P 7/42; C12 P 13/02; C12 P 13/04

ABSTRACTED-PUB-NO: WO 200257476A
BASIC-ABSTRACT:

NOVELTY - Producing (M1) 3-(2-hydroxy-3-methyl-butyrylamino)-propionic acid (HMBPA), involves culturing a microorganism under conditions such that HMBPA is produced, and detecting or isolating the HMBPA produced by the microorganism.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(1) enhancing (M2) production of HMBPA relative to pantothenate, by culturing a recombinant microorganism under conditions such that the HMBPA production is enhanced relative to pantothenate production;

(2) producing (M3) 2-hydroxyisovaleric acid (alpha -HIV), by culturing a

microorganism which over expresses PanE1 or PanE2 and which further has reduced PanC or PanD activity under conditions such that alpha -HIV is produced;

(3) a product (I) that is produced by M1, M2 or M3; and

(4) a recombinant microorganisms (II) that produced HMBPA, where (II) has a modification in at least one gene encoding ketopantoate reductase that results in increased reductase activity and has a mutation or deletion in the panB gene that results in reduced ketopantoate hydroxymethyltransferase activity.

ACTIVITY - Antilipemic.

MECHANISM OF ACTION - None given.

USE - M1 is useful for producing HMBPA. M2 is useful for enhancing production of HMBPA relative to pantothenate. M3 is useful for producing alpha -HIV (claimed). M1 is useful for producing HMBPA that is useful for synthesizing inhibitors of hydroxy methyl glutarate (HMG) CoA reductase (II) for treating hypercholesterolemia, coronary atherosclerosis progression, and to reduce risk of cardiovascular event in patients at risk. M3 is useful for producing alpha -HIV which is useful in the prevention of aging of skin, to synthesize alpha -hydroxy esters which have been found to induce increased skin thickness, and to treat skin disorders such as age spots, skin lines, wrinkles, photoaging and aging.

ADVANTAGE - M1 results in production of HMBPA at a significantly high yield at a commercially feasible cost.

☐ 28. Document ID: US 20020164602 A1, WO 200214559 A2, AU 200185429 A

L1: Entry 28 of 29 File: DWPI Nov 7, 2002

DERWENT-ACC-NO: 2002-269209
DERWENT-WEEK: 200275

TITLE: Identifying inhibitor of bacterial tetrahydrofolate biosynthesis for treating bacterial infection, by contacting a cell having ketopantoate hydroxymethyltransferase promoter with an agent and measuring promoter activity

INVENTOR: MURPHY, C K; MURPHY, C

PRIORITY-DATA: 2000US-224925P (August 11, 2000), 2001US-0925824 (August 9, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 20020164602 A1	November 7, 2002		000	C12Q001/68
WO 200214559 A2	February 21, 2002	E	031	C12Q001/68
AU 200185429 A	February 25, 2002		000	C12Q001/68

INT-CL (IPC): C12 Q 1/18; C12 Q 1/68; G01 N 33/554; G01 N 33/569

ABSTRACTED-PUB-NO: WO 200214559A
BASIC-ABSTRACT:

NOVELTY - Determining (M) whether a test compound (C) is an inhibitor of bacterial tetrahydrofolate (THF) biosynthesis, comprising contacting a bacterial cell with (C), where the cell contains a promoter, the activity of which is increased in the presence of a compound that inhibits THF biosynthesis, and measuring activity of the promoter, is new.

DETAILED DESCRIPTION - (M) involves contacting a bacterial cell with (C), where the cell contains a promoter, whose activity is increased in the presence of a compound that inhibits THF biosynthesis, and measuring activity of the promoter, where an increase in the activity, relative to the activity of the promoter in the absence of (C), indicates that (C) is an inhibitor of THF biosynthesis.

INDEPENDENT CLAIMS are also included for the following:

(1) a composition (C1) comprising an antibacterial agent identified by M;

(2) an inhibitor (I) of bacterial tetrahydrofolate biosynthesis prepared by using C1 as a lead compound;

(3) an antibacterial agent prepared by using C1 as a lead compound; and

(4) a composition (C2) comprising the above antibacterial agent.

ACTIVITY - Antibacterial.

No suitable data given.

MECHANISM OF ACTION - Inhibitor of bacterial THF biosynthesis; inhibitor of bacterial growth.

USE - (M) is useful for determining whether a test compound is an inhibitor of bacterial THF biosynthesis, and also for determining whether a test compound is an antibacterial agent. The method comprises identifying an inhibitor of THF biosynthesis and determining whether the inhibitor inhibits growth of a bacterium. The inhibition of THF biosynthesis is detected as inhibition of para-aminobenzoic acid (PABA) uptake into cells and the inhibition is measured in a biochemical assay with a cell extract for an enzyme activity which is required for THF biosynthesis. The enzyme activity assayed is GTP cyclohydrase, 7,8 dihydroneopterin aldolase, 6-hydroxymethyl-7,8-dihydropterin pyrophosphokinase, dihydropteroate synthase, aminodeoxychorismate synthase, aminodeoxychorismate lyase, dihydrofolate:foly-polyglutamate synthase or dihydrofolate reductase. C1 is useful for treating a bacterial infection caused by Streptococcus pneumoniae, S.pyogenes, S.agalactiae, S.endocarditis, S.faecium, S.sangus, S.viridans, S.hemolyticus in a mammal, in particular a human. The bacterium is a pathogenic or non-pathogenic bacterium. The inhibitor identified by (M) is useful as a lead compound for preparing antibacterial agents. The method comprises screening multiple test compounds by (M), identifying candidate compounds that increase promoter activity, identifying and selecting from the candidate compounds a lead compound that inhibits growth of a bacterium, and formulating the selected compound as an antibacterial agent. The method optionally comprises derivatizing the selected lead compound to produce derivatives of lead compound, identifying a derivative that inhibits growth of a bacterium and formulating the identified derivative as an antibacterial agent. (I) is useful for inhibiting bacterial THF biosynthesis in bacteria infecting an organism. C2 is useful for inhibiting growth of bacteria in an organism having a bacterial infection (claimed). The compounds can be used to treat infection of gram negative bacteria e.g., Shigella, Escherichia coli, Klebsiella, and Yersinia.

ADVANTAGE - (M) is rapid and convenient and can be used for high-throughput screening of a wide variety of test compounds. Lead compounds can readily be

selected from a large number of test compounds. Assays employing the panB promoter are capable of detecting THF biosynthesis inhibitors at concentrations both above and below their minimal inhibitory concentrations. The assays are cell-based and can be used to identify antibacterial agents that can efficiently enter bacterial cells. As THF is the product of the multi-step biochemical pathway, (M) enables the identification of compounds that may inhibit any enzymatic function or step in the pathway.

☐ 29. Document ID: WO 200121772 A2, AU 200077087 A, BR 200014115 A, EP 1214420 A2, NO 200201382 A, HU 200202705 A2, CZ 200201013 A3, SK 200200522 A3, KR 2002092912 A, ZA 200203116 A, CN 1420931 A, JP 2003527828 W

L1: Entry 29 of 29 File: DWPI Mar 29, 2001

DERWENT-ACC-NO: 2001-218644
DERWENT-WEEK: 200410

TITLE: New recombinant microorganism which overexpress a Bacillus subtilis pantothenate biosynthetic enzyme, useful for the high yield production of panto-compounds such as pantothenate and pantoate

INVENTOR: HERMANN, T; PATTERSON, T A ; PERO, J G ; YOCUM, R R

PRIORITY-DATA: 2000US-227860P (August 24, 2000), 1999US-0400494 (September 21, 1999), 2000US-210072P (June 7, 2000), 2000US-221836P (July 28, 2000)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 200121772 A2	March 29, 2001	E	111	C12N009/00
AU 200077087 A	April 24, 2001		000	C12N009/00
BR 200014115 A	May 21, 2002		000	C12N009/00
EP 1214420 A2	June 19, 2002	E	000	C12N015/52
NO 200201382 A	May 16, 2002		000	C12N000/00
HU 200202705 A2	December 28, 2002		000	C12N015/52
CZ 200201013 A3	December 11, 2002		000	C12N009/00
SK 200200522 A3	March 4, 2003		000	C12N015/00
KR 2002092912 A	December 12, 2002		000	C12P021/00
ZA 200203116 A	June 25, 2003		314	C12N000/00
CN 1420931 A	May 28, 2003		000	C12N015/52
JP 2003527828 W	September 24, 2003		343	C12N015/09

INT-CL (IPC): C12 N 0/00; C12 N 1/21; C12 N 9/00; C12 N 9/02; C12 N 9/10; C12 N 9/12; C12 N 9/88; C12 N 15/00; C12 N 15/09; C12 N 15/52; C12 N 15/53; C12 N 15/54; C12 N 15/60; C12 N 15/75; C12 P 7/42; C12 P 13/02; C12 P 13/04; C12 P 13/06; C12 P 21/00; C12 Q 1/48; C12 P 13/04; C12 R 1:125

ABSTRACTED-PUB-NO: WO 200121772A
BASIC-ABSTRACT:

NOVELTY - A recombinant microorganism (I) which overexpresses at least one Bacillus subtilis pantothenate biosynthetic enzyme, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) producing a panto-compound (II) comprising culturing (I);

(2) producing (M1) (II) comprising culturing a ketopantoate reductase-overexpressing (KPAR-O) microorganism;

(3) producing (M2) pantothenate in a manner independent of precursor feed comprising culturing an aspartate- alpha -decarboxylase-overexpressing (A alpha D-O microorganism with a deregulated isoleucine-valine (ilv) pathway;

(4) producing (M3) at least 2 g/L, preferably at least 30 g/L pantothenate in a manner independent of aspartate/ beta -alanine or valine/ alpha -ketoisovalerate feed comprising culturing an A alpha D-O microorganism or a microorganism with a deregulated ilv biosynthetic pathway respectively;

(5) a beta -alanine independent high yield production (M4) of pantothenate comprising culturing a manipulated microorganism;

(6) producing (II) comprising contacting a composition containing at least one pantothenate or isoleucine-valine biosynthesis pathway precursor with at least one isolated Bacillus enzyme such as ketopantoate hydroxymethyltransferase, ketopantoate reductase, pantothenate synthetase or aspartate- alpha -decarboxylase;

(7) producing beta -alanine comprising culturing an A alpha D-O microorganism or contacting a composition containing aspartate with an isolated Bacillus aspartate-alpha -decarboxylase enzyme;

(8) enhancing (M5) production of (II) comprising culturing a mutant microorganism with a mutant coaX gene;

(9) producing (M6) (II) comprising a pantothenate kinase mutant microorganism under conditions such that (II) is produced at a significantly high yield;

(10) enhancing production of (II) comprising culturing a microorganism that has a deregulated pantothenate biosynthetic pathway and has a mutation that results in reduced pantothenate kinase activity;

(11) identifying compounds which modulate pantothenate kinase activity comprising contacting a recombinant cell expressing pantothenate kinase encoded by coaX with a test compound and determining the ability of the test compound to modulate pantothenate kinase activity in the cell;

(12) a recombinant microorganism (III) which overexpresses aspartate- alpha -decarboxylase and has a deregulated ilv biosynthetic pathway;

(13) a recombinant microorganism (IV) having a mutant coaX gene encoding reduced pantothenate kinase activity and optionally a mutant coaA gene;

(14) a recombinant microorganism (V) comprising a vector containing an isolated coaX gene;

(15) a recombinant microorganism (V) that overproduces (II) and has a deregulated pantothenate biosynthetic pathway and at least one mutation that results in a decrease in the capacity of (V) to synthesize coenzyme A (CoA);

(16) a recombinant microorganism such as PA221, PA235, PA236, PA313, PA410, PA402, PA403, PA411, PA412, PA413, PA303, PA327, PA328, PA401, PA340, PA342, PA404, PA405, PA374, PA354, PA365, PA377, PA651 or PA824;

(17) a recombinant vector for use in the production of (II) comprising a nucleic acid sequence which encodes at least one Bacillus pantothenate biosynthetic enzyme;

(18) a recombinant vector (VI) comprising a fully defined nucleic acid sequence of 831, 858, 381, 894 or 2363 base pairs (bp) as given in the specification;

(19) a vector comprising a mutant coaX gene encoding a pantothenate kinase enzyme with reduced activity or an isolated coaX gene, preferably from Bacillus subtilis'

(20) a vector such as pAN004, pAN005, pAN006, pAN236, pAN423, pAN428, pAN429, pAN441, pAN442, pAN443, pAN251, pAN267, pAN256, pAN257, pAN263, pAN240, pAN294, pAN296, pAN336, pAN341 or pAN342;

(21) a recombinant microorganism comprising (VI);

(22) an isolated nucleic acid molecule (VII) (NAM) which encodes at least one Bacillus pantothenate biosynthetic gene;

(23) an isolated Bacillus, preferably Bacillus subtilis pantothenate biosynthetic enzyme such as ketopantoate reductase and aspartate- alpha -decarboxylase;

(24) an isolated NAM comprising a (mutant) coaX gene; and

(25) an isolated pantothenate kinase encoded by (VII).

USE - The microorganisms and methods are useful for producing a panto-compound such as pantothenate or pantoate, which is a nutritional requirement for livestock and humans. The methods are also useful for the identification of pantothenate kinase modulators (claimed).

ADVANTAGE - Panto-compounds are produced at a significantly higher yield than prior art methods and can be produced independent of the need to feed precursors which decreases expense.

The ability of Bacillus subtilis strains PA221, PA222, PA233 and PA235 to produce pantothenate in test tube cultures was assessed. Each strain was grown in medium supplemented with 5 g/L alpha -ketoisovalerate (alpha -KIV) and 5 g/L beta -alanine. Culture supernatants were autoclaved and assayed. Relative to the parent strains RL-1 (30 mg/L) and PY79 (40 mg/L), the engineered strains produced approx. 8-30 fold more pantothenate (250-110 mg/L).

Terms	Documents
ketopantoate hydroxymethyltransferase	29

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TOTAL FOR ALL FILES
L7            0 KETOPANTOATE HYDROXYMETHLTRANSFERASE

=> s ketopantoate hydroxymethyltransferase
L8           13 FILE MEDLINE
L9           43 FILE CAPLUS
L10          21 FILE SCISEARCH
L11          10 FILE LIFESCI
L12          23 FILE BIOSIS
L13          13 FILE EMBASE

TOTAL FOR ALL FILES
L14         123 KETOPANTOATE HYDROXYMETHYLTRANSFERASE

=> s l14 not 2002-2004/py
TOTAL FOR ALL FILES
L21          63 L14 NOT 2002-2004/PY

=> dup rem l21
PROCESSING COMPLETED FOR L21
L22          25 DUP REM L21 (38 DUPLICATES REMOVED)

=> d ibib abs 1-25

L22  ANSWER 1 OF 25  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2001:185096  CAPLUS
DOCUMENT NUMBER:          134:221522
TITLE:                    Fermentation of pantothenic acid with coryneform
                          bacteria overexpressing a pyruvate carboxylase gene
INVENTOR(S):              Dusch, Nicole; Thierbach, Georg
PATENT ASSIGNEE(S):       Degussa-Huls Aktiengesellschaft, Germany; Institut
                          fuer Innovation an der Universitat Bielefeld G.m.b.H.
SOURCE:                   Eur. Pat. Appl., 14 pp.
                          CODEN: EPXXDW
DOCUMENT TYPE:            Patent
LANGUAGE:                 German
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.          DATE
     ---------------      ----   --------    --------------------     --------
     EP 1083225           A1     20010314    EP 2000-118935           20000901
         R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, LT, LV, FI, RO
     DE 10031999          A1     20010419    DE 2000-10031999         20000630
     BR 2000004000        A      20010417    BR 2000-4000             20000905
     JP 2001112489        A2     20010424    JP 2000-270569           20000906
     ZA 2000004725        A      20010307    ZA 2000-4725             20000907
     CN 1288061           A      20010321    CN 2000-124485           20000908
PRIORITY APPLN. INFO.:                       DE 1999-19943055    A    19990909
                                             DE 2000-10031999    A    20000630
AB   A method of increasing yields of pantothenic acid from Coryneform bacteria
     by overexpressing the pyruvate carboxylase gene pyc is described.
     Overexpression of the gene results in a larger acetoacetate pool that is
     then used to manuf. pantothenate.  Corynebacterium glutamicum
     ATCC13032.DELTA.ilvA was transformed with an expression vector for
     overexpression of the pyc gene.  The parental cell produced pantothenate
     at 3.8 ng/mL at an OD580 of 11.3 and the transgenic cells produced it at
     8.5 ng/mL at an OD580 of 9.3.
REFERENCE COUNT:          4      THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
                                 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22  ANSWER 2 OF 25  BIOSIS  COPYRIGHT (c) 2004 The Thomson Corporation.  on
     STN
ACCESSION NUMBER:    2001:378195  BIOSIS
DOCUMENT NUMBER:     PREV200100378195
TITLE:               The biosynthesis of coenzyme A in bacteria.
AUTHOR(S):           Begley, Tadhg P. [Reprint author]; Kinsland, Cynthia
                     [Reprint author]; Strauss, Erick [Reprint author]
```

CORPORATE SOURCE: Department of Chemistry and Chemical Biology, Cornell University, Ithaca, New York, USA
SOURCE: Litwack, Gerald; Begley, Tadhg. Vitam. Horm. (N. Y.), (2001) pp. 157-171. Vitamins and Hormones. Cofactor biosynthesis: A mechanistic perspective. print. Publisher: Academic Press Inc., 525 B Street, Suite 1900, San Diego, CA, 92101-4495, USA; Academic Press, Harcourt Place, 32 Jamestown Road, London, NW1 7BY, UK. Series: Vitamins and Hormones. CODEN: VIHOAQ. ISSN: 0083-6729. ISBN: 0-12-709861-5 (cloth).
DOCUMENT TYPE: Book
Book; (Book Chapter)
LANGUAGE: English
ENTRY DATE: Entered STN: 8 Aug 2001
Last Updated on STN: 19 Feb 2002

L22 ANSWER 3 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:64718 CAPLUS
DOCUMENT NUMBER: 135:163254
TITLE: Diel expression of cell cycle-related genes in synchronized cultures of Prochlorococcus sp. strain PCC 9511
AUTHOR(S): Holtzendorff, J.; Partensky, F.; Jacquet, S.; Bruyant, F.; Marie, D.; Garczarek, L.; Mary, I.; Vaulot, D.; Hess, W. R.
CORPORATE SOURCE: Institute of Biology/Genetics, Humboldt-University, Berlin, D-10115, Germany
SOURCE: Journal of Bacteriology (2001), 183(3), 915-920
CODEN: JOBAAY; ISSN: 0021-9193
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The cell cycle of the chlorophyll b-possessing marine cyanobacterium Prochlorococcus is highly synchronized under natural conditions. To understand the underlying mol. mechanisms we cloned and sequenced dnaA and ftsZ, two key cell cycle-assocd. genes, and studied their expression. An axenic culture of Prochlorococcus sp. strain PCC 9511 was grown in a turbidostat with a 12 h-12 h light-dark cycle for 2 wk. During the light periods, a dynamic light regimen was used in order to simulate the natural conditions found in the upper layers of the world's oceans. This treatment resulted in strong cell cycle synchronization that was monitored by flow cytometry. The steady-state mRNA levels of dnaA and ftsZ were monitored at 4-h intervals during four consecutive division cycles. Both genes exhibited clear diel expression patterns with mRNA maxima during the replication (S) phase. Western blot expts. indicated that the peak of FtsZ concn. occurred at night, i.e., at the time of cell division. Thus, the transcript accumulation of genes involved in replication and division is coordinated in Prochlorococcus sp. strain PCC 9511 and might be crucial for detg. the timing of DNA replication and cell division.
REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 4 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 2001:580623 CAPLUS
DOCUMENT NUMBER: 135:238557
TITLE: Cloning and characterization of the Mycobacterium bovis BCG panB gene encoding **ketopantoate hydroxymethyltransferase**
AUTHOR(S): Kim, Jin Koo; Kim, Kwang Dong; Lim, Jong-Seok; Lee, Hee Gu; Kim, Sang Jae; Cho, Sang-Hyun; Jeong, Won-Hwa; Choe, In Seong; Chung, Tai Wha; Paik, Sang-Gi; Choe, Yong-Kyung
CORPORATE SOURCE: Cell Biology Laboratory, Korea Research Institute of Bioscience and Biotechnology (KRIBB), Taejon, 305-600, S. Korea
SOURCE: Journal of Biochemistry and Molecular Biology (2001), 34(4), 342-346
CODEN: JBMBE5; ISSN: 1225-8687
PUBLISHER: Springer-Verlag Singapore Pte. Ltd.
DOCUMENT TYPE: Journal

LANGUAGE: English

AB The Mycobacterium bovis BCG panB gene, encoding **ketopantoate hydroxymethyltransferase** (KPHMT), was cloned from a .lambda.gt11 genomic library and sequenced. The DNA sequence encodes a protein that contains 281 amino acid residues (Mr 29,337) with a high similarity to the KPHMTs. Subcloning of a 846 bp open reading frame (ORF), but not a 735 bp ORF, into the vector pUC19 led to complementation of the panB mutant of Escherichia coli. The BCG panB gene was overexpressed in E. coli and the KPHMT purified to homogeneity. The recombinant protein was further confirmed by an enzymic assay.

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 5 OF 25 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2001:172199 SCISEARCH

THE GENUINE ARTICLE: BR61H

TITLE: The biosynthesis of coenzyme A in bacteria

AUTHOR: Begley T P (Reprint); Kinsland C; Strauss E

CORPORATE SOURCE: Cornell Univ, Dept Chem & Chem Biol, Ithaca, NY 14853 USA (Reprint)

COUNTRY OF AUTHOR: USA

SOURCE: VITAMINS AND HORMONES - ADVANCES IN RESEARCH AND APPLICATIONS, VOL 61, (FEB 2001) Vol. 61, pp. 157-171. Publisher: ACADEMIC PRESS INC, 525 B STREET, SUITE 1900, SAN DIEGO, CA 92101-4495 USA. ISSN: 0083-6729.

DOCUMENT TYPE: General Review; Journal

LANGUAGE: English

REFERENCE COUNT: 50

L22 ANSWER 6 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2001:169488 CAPLUS

DOCUMENT NUMBER: 135:252592

TITLE: Molecular cloning and application of a gene complementing pantothenic acid auxotrophy of sake yeast Kyokai no. 7

AUTHOR(S): Shimoi, Hitoshi; Okuda, Masaki; Ito, Kiyoshi

CORPORATE SOURCE: National Research Institute of Brewing, Higashi-Hiroshima, 739-0046, Japan

SOURCE: Journal of Bioscience and Bioengineering (2000), 90(6), 643-647 CODEN: JBBIF6; ISSN: 1389-1723

PUBLISHER: Society for Bioscience and Bioengineering, Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Kyokai no. 7 is the most widely used yeast in sake brewing. This yeast is a pantothenic acid auxotroph at 35.degree.C, and this phenotype has been used to distinguish Kyokai no. 7 from other sake yeasts. We cloned a DNA fragment complementing the pantothenic acid auxotrophy from a genomic library of a Saccharomyces cerevisiae lab. strain. DNA sequence anal. revealed that the DNA fragment encodes ECM31, the deletion of which had previously been identified as a calcofluor white-sensitive mutation. The ECM31 product is similar to the Escherichia coli **ketopantoate hydroxymethyltransferase**. Disruption of ECM31 in a lab. S. cerevisiae strain resulted in pantothenic acid auxotrophy, indicating that ECM31 is also involved in pantothenic acid synthesis in yeast. A hybrid of a Kyokai no. 7 haploid and the ecm31 disruptant required pantothenic acid at 35.degree.C for its growth, suggesting that Kyokai no. 7 possesses a temp.-sensitive allele of ECM31. Thus, the ECM31 gene can be used as a selective marker in the transformation of Kyokai no. 7.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 7 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 3

ACCESSION NUMBER: 1999:302513 CAPLUS

DOCUMENT NUMBER: 131:85307

TITLE: D-pantothenate synthesis in Corynebacterium glutamicum and use of panBC and genes encoding L-valine synthesis for D-pantothenate overproduction

AUTHOR(S): Sahm, Hermann; Eggeling, Lothar

CORPORATE SOURCE: Institut fur Biotechnologie, Forschungszentrum Julich GmbH, Julich, 52425, Germany
SOURCE: Applied and Environmental Microbiology (1999), 65(5), 1973-1979
CODEN: AEMIDF; ISSN: 0099-2240
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB D-Pantothenate is synthesized via four enzymes from ketoisovalerate, which is an intermediate of branched-chain amino acid synthesis. We quantified three of these enzyme activities in Corynebacterium glutamicum and detd. specific activities ranging from 0.00014 to 0.001 .mu.mol/min mg (protein)-1. The genes encoding the **ketopantoate hydroxymethyltransferase** and the pantothenate synthetase were cloned, sequenced, and functionally characterized. These studies suggest that panBC constitutes an operon. By using panC, an assay system was developed to quantify D-pantothenate. The wild type of C. glutamicum was found to accumulate 9 .mu.g of this vitamin per L. A strain was constructed (i) to abolish L-isoleucine synthesis, (ii) to result in increased ketoisovalerate formation, and (iii) to enable its further conversion to D-pantothenate. The best resulting strain has ilvA deleted from its chromosome and has two plasmids to overexpress genes of ketoisovalerate (ilvBNCD) and D-pantothenate (panBC) synthesis. With this strain a D-pantothenate accumulation of up to 1 g/L is achieved, which is a 105-fold increase in concn. compared to that of the original wild-type strain. From the series of strains analyzed it follows that an increased ketoisovalerate availability is mandatory to direct the metabolite flux into the D-pantothenate-specific part of the pathway and that the availability of .beta.-alanine is essential for D-pantothenate formation.

REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 8 OF 25 MEDLINE on STN DUPLICATE 4
ACCESSION NUMBER: 1999430867 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10503542
TITLE: The Aspergillus nidulans panB gene encodes **ketopantoate hydroxymethyltransferase**, required for biosynthesis of pantothenate and Coenzyme A.
AUTHOR: Kurtov D; Kinghorn J R; Unkles S E
CORPORATE SOURCE: Department of Microbiology, Monash University, Clayton, Victoria, Australia.
SOURCE: Molecular & general genetics : MGG, (1999 Aug) 262 (1) 115-20.
Journal code: 0125036. ISSN: 0026-8925.
PUB. COUNTRY: GERMANY: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AF134703
ENTRY MONTH: 199910
ENTRY DATE: Entered STN: 19991101
Last Updated on STN: 19991101
Entered Medline: 19991018

AB **Ketopantoate hydroxymethyltransferase**, which is encoded by the panB gene in the lower eukaryote Aspergillus nidulans, is essential for the biosynthesis of coenzyme A, while the pathway intermediate 4'-phosphopantetheine is required for penicillin production. **Ketopantoate hydroxymethyltransferase** could also serve as a target for anti-fungal drugs, since it is not present in mammals. Clones of panB were identified by complementation of the corresponding mutant, and the DNA sequence of the gene was determined. The fungal panB gene encodes a predicted protein of molecular mass 37.7 kDa, containing two short sequence motifs, LeuValGlyAspSer and GlyIleGlyAlaGly, that are completely conserved between prokaryotic and eukaryotic homologues. The mutation panB100 was found to result in deletion of Gly-168, the last glycine within the latter conserved motif. Analysis by gel filtration suggests that the fungal PanB protein can be expressed in Escherichia coli as an active octameric enzyme. The panB transcript is present in low abundance and, most probably, a small increase in transcript levels occurs in the absence of exogenous pantothenate.

L22 ANSWER 9 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:195478 CAPLUS
DOCUMENT NUMBER: 130:249283
TITLE: Genetic and physiological analysis of the formation of pantothenate and valine in Corynebacterium glutamicum
AUTHOR(S): Reuter, Uwe
CORPORATE SOURCE: Inst. Biotechnologie, Forschungszentrum Juelich G.m.b.H., Juelich, D-52425, Germany
SOURCE: Berichte des Forschungszentrums Juelich (1998), Juel-3606, 1-115 pp.
CODEN: FJBEE5; ISSN: 0366-0885
DOCUMENT TYPE: Report
LANGUAGE: German

AB The Gram-pos. bacterium C. glutamicum is used for the prodn. of amino acids, e.g. of L-glutamate and L-Lys. The biosynthetic pathway of pantothenic acid of this organism was elucidated, and the formation of L-Val and D-pantothenic acid to enable a microbiol. prodn. of these compds was increased. The genes panB and panC were cloned, which encode **ketopantoate hydroxymethyltransferase** and pantothenate synthetase. The 2 enzymes catalyze important steps of the biosynthetic pathway of pantothenate. Sequence anal. revealed that panB comprises 813 bp and panC 837 bp. The genes are organized as an operon. Assays for the enzymes of the pathway were developed. The pantothenate synthetase has a sp. activity of 1 nmol/min-mg protein, **ketopantoate hydroxymethyltransferase** one of 0.14 nmol/min-mg protein, and the aspartate .alpha.-decarboxylase one of 0.11 nmol/min-mg protein. The quant. anal. of the formation of pantothenic acid revealed that C. glutamicum accumulates 10 .mu.g pantothenic acid/L. A system to isolate mutants with an increased formation of pantothenate, which is based on a deficiency of pantothenic acid induced by .alpha.-ketobutyrate, was established. The application of this method lad to the isolation of a mutant which accumulates 250 .mu.g pantothenate and 1.4 g valine/L. Overexpression of the genes of the valine and isoleucine biosynthetic pathway (ilvBNCD), in combination with the deletion of the threonine dehydratase gene ilvA, resulted in the construction of a strain which accumulates 11.3 g valine and 190 mg pantothenate/L. Addnl. overexpression of panBC led to an accumulation of .ltoreq.1 g pantothenic acid/L. Thus, an increase of the formation of pantothenic acid in C. glutamicum by a factor of 105 has been achieved.

REFERENCE COUNT: 163 THERE ARE 163 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 10 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:525558 CAPLUS
DOCUMENT NUMBER: 125:213729
TITLE: Sequence analysis of the Bacillus subtilis chromosome region between the serA and kdg loci cloned in a yeast artificial chromosome
AUTHOR(S): Sorokin, Alexei; Azevedo, Vasco; Zumstein, Emmanuelle; Galleron, Nathalie; Ehrlich, S. Dusko; Serror, Pascale
CORPORATE SOURCE: Laboratoire de Genetique Microbienne, Inst. National de la Recherche Agronomique, Jouy en Josas, 78352, Fr.
SOURCE: Microbiology (Reading, United Kingdom) (1996), 142(8), 2005-2016
CODEN: MROBEO; ISSN: 1350-0872
PUBLISHER: Society for General Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The std. strategies of genome sequencing based on .lambda.-vector or cosmid libraries are only partially applicable to AT-rich Gram-pos. bacteria because of the problem of instability of their chromosomal DNA in heterologous hosts like Escherichia coli. One complete collection of ordered clones known for such bacteria is that of Bacillus subtilis, established by using yeast artificial chromosomes (YACs). This paper reports the results of the direct use of one of the YAC clones from the above collection for the sequencing of the region cloned in it. The strategy applied consisted of the following: (i) construction of M13 banks of the partially purified YAC DNA and sequencing of 800 M13 clones chosen at random; (ii) directed selection of M13 clones to sequence by using marginal contig fragments as hybridization probes; (iii) direct sequencing

of joining PCR fragments obtained by combinations of primers corresponding to the ends of representative contigs. The complete 104 109 bp insert sequence of this YAC clone was thus established. The strategy used allowed as to avoid resequencing the two largest, previously sequenced, contigs (13695 and 20303 bp) of the YAC insert. The authors propose that the strategy used can be applied to the sequencing of the whole bacterial genome without intermediate cloning, as well as for larger inserts of eukaryotic origin cloned in YACs. Sequencing of the insert of the YAC clone 15-6B allowed us to establish the contiguous sequence of 127 kb from spoIIA to kdg. The organization of the newly detd. region is presented. Of the 138 ORFs identified in the spoIIA-kdg region, 57 have no clear putative function from their homol. to proteins in the databases.

L22 ANSWER 11 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:582457 CAPLUS
DOCUMENT NUMBER: 125:266976
TITLE: Characterization and sequence of the Escherichia coli panBCD gene cluster
AUTHOR(S): Merkel, William K.; Nichols, Brian P.
CORPORATE SOURCE: Laboratory for Molecular Biology m/c 567, Department of Biological Sciences, University of Illinois at Chicago, 900 S. Ashland Ave, Chicago, IL, 60607, USA
SOURCE: FEMS Microbiology Letters (1996), 143(2-3), 247-252
CODEN: FMLED7; ISSN: 0378-1097
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A 4589 bp DNA segment contg. the Escherichia coli panBCD gene cluster was sequenced, and found to contain 6 complete open reading frames. PanB, panC, and panD were identified by subcloning and insertional mutagenesis. The orientation of panD was also confirmed by orientation-specific expression of aspartate-1-decarboxylase. PanB and panC lie adjacent to one another, but are sepd. from panD by orf3, which is oriented in the opposite direction. Interruptions in the remaining open reading frames did not affect growth on glucose-minimal medium. No significant similarity to sequences in databases was found for orf1 and orf2. Orf3 contained extensive similarity to reading frames defined by E. coli yjiP, yjiQ, yhgA, and yafD. The function of these amino acid sequences is as yet undefined.

L22 ANSWER 12 OF 25 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 1996:259083 BIOSIS
DOCUMENT NUMBER: PREV199698815212
TITLE: Cloning and sequencing of panB gene of Mycobacterium bovis BCG and Mycobacterium tuberculosis.
AUTHOR(S): Choe, Y. K. [Reprint author]; Kim, J. K.; Kim, S. J.; Bai, G. H.; Park, Y. K.; Kang, S. W.; Kim, Y. S.; Kim, C. H.; Choe, I. S.; Chung, T. W.
CORPORATE SOURCE: Korea Res. Inst. Biosci. and Biotech, Taejon, South Korea
SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (1996) Vol. 96, No. 0, pp. 120.
Meeting Info.: 96th General Meeting of the American Society for Microbiology. New Orleans, Louisiana, USA. May 19-23, 1996.
ISSN: 1060-2011.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 31 May 1996
Last Updated on STN: 11 Jul 1996

L22 ANSWER 13 OF 25 MEDLINE on STN DUPLICATE 5
ACCESSION NUMBER: 93209959 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8096212
TITLE: Cloning and sequencing of the Escherichia coli panB gene, which encodes **ketopantoate hydroxymethyltransferase**, and overexpression of the enzyme.
AUTHOR: Jones C E; Brook J M; Buck D; Abell C; Smith A G
CORPORATE SOURCE: Department of Plant Sciences, University of Cambridge,

England.
SOURCE: Journal of bacteriology, (1993 Apr) 175 (7) 2125-30.
Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-X65538
ENTRY MONTH: 199304
ENTRY DATE: Entered STN: 19930514
Last Updated on STN: 19950206
Entered Medline: 19930423

AB The panB gene from Escherichia coli, encoding the first enzyme of the pantothenate biosynthesis pathway, **ketopantoate hydroxymethyltransferase** (KPHMT), has been isolated by functional complementation of a panB mutant strain with an E. coli genomic library. The gene is 792 bp long, encoding a protein of 264 amino acids with a predicted M(r) of 28,179. The identity of the gene product as **ketopantoate hydroxymethyltransferase** was confirmed by purification of the enzyme protein, which was overexpressed approximately 50-fold in the mutant harboring the gene on a high-copy-number plasmid. The N-terminal amino acid sequence of the purified protein was found to be identical to that predicted from the gene sequence, as was its mass, determined by electrospray mass spectrometry. Upstream of the panB gene is an incomplete open reading frame encoding a protein of 220 amino acids, which shares sequence similarity to fimbrial precursor proteins from other bacteria. Northern (RNA) analysis showed that the panB gene is likely to be cotranscribed with at least one other gene but that this is not the putative fimbrial protein, since no transcripts for this gene could be detected.

L22 ANSWER 14 OF 25 MEDLINE on STN DUPLICATE 6
ACCESSION NUMBER: 91286213 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1844812
TITLE: Isolation and characterization of Bacillus subtilis mutants blocked in the synthesis of pantothenic acid.
AUTHOR: Baigori M; Grau R; Morbidoni H R; de Mendoza D
CORPORATE SOURCE: Departamento de Microbiologia, Facultad de Ciencias Bioquimicas y Farmaceuticas, Universidad Nacional de Rosario, Republica Argentina.
SOURCE: Journal of bacteriology, (1991 Jul) 173 (13) 4240-2.
Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199108
ENTRY DATE: Entered STN: 19910825
Last Updated on STN: 19910825
Entered Medline: 19910802

AB We have produced and characterized by physiological and enzymatic analyses pantothenate (pan) auxotrophs of Bacillus subtilis. panB auxotrophs are deficient in **ketopantoate hydroxymethyltransferase**, whereas panE mutants lack ketopantoic acid reductase. The pan mutations were mapped by phage PBS1-mediated two-factor crosses and found to be located in the interval purE-tre of the genetic map of B. subtilis.

L22 ANSWER 15 OF 25 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 91:388055 SCISEARCH
THE GENUINE ARTICLE: FV039
TITLE: ISOLATION AND CHARACTERIZATION OF BACILLUS-SUBTILIS MUTANTS BLOCKED IN THE SYNTHESIS OF PANTOTHENIC-ACID
AUTHOR: BAIGORI M; GRAU R; MORBIDONI H R; DEMENDOZA D (Reprint)
CORPORATE SOURCE: UNIV NACL SUR, FAC CIENCIAS BIOQUIM & FARMACEUT, DEPT MICROBIOL, RA-8000 BAHIA BLANCA, ARGENTINA
COUNTRY OF AUTHOR: ARGENTINA
SOURCE: JOURNAL OF BACTERIOLOGY, (1991) Vol. 173, No. 13, pp. 4240-4242.
DOCUMENT TYPE: Note; Journal
FILE SEGMENT: LIFE

LANGUAGE: ENGLISH
REFERENCE COUNT: 14
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We have produced and characterized by physiological and enzymatic analyses pantothenate (pan) auxotrophs of Bacillus subtilis. panB auxotrophs are deficient in **ketopantoate hydroxymethyltransferase**, whereas panE mutants lack ketopantoic acid reductase. The pan mutations were mapped by phage PBS1-mediated two-factor crosses and found to be located in the interval purE-tre of the genetic map of B. subtilis.

L22 ANSWER 16 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 7
ACCESSION NUMBER: 1984:487141 CAPLUS
DOCUMENT NUMBER: 101:87141
TITLE: Steric course of **ketopantoate hydroxymethyltransferase** in E. coli
AUTHOR(S): Aberhart, D. John; Russell, David J.
CORPORATE SOURCE: Worcester Found. Exp. Biol., Shrewsbury, MA, 01545, USA
SOURCE: Journal of the American Chemical Society (1984), 106(17), 4902-6
CODEN: JACSAT; ISSN: 0002-7863
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The conversion of .alpha.-ketoisovaleric acid (.alpha.-KIVA) to ketopantoate by the 5,10-methylenetetrahydrofolate-dependent enzyme **ketopantoate hydroxymethyltransferase** (KHMT) in Escherichia coli proceeds in a retention mode at the .beta.-position of .alpha.-KIVA. The 5,10-methylenetetrahydrofolate formed in vivo by serine hydroxymethyltransferase (SHMT) from stereospecifically deuterated (3S-d1) serine was converted by KHMT into an approx. 3:1 ratio of deuterated ketopantoates with the 4S isomer predominating. Apparently, KHMT and SHMT have the same overall steric course in E. coli.

L22 ANSWER 17 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1982:435845 CAPLUS
DOCUMENT NUMBER: 97:35845
TITLE: Metabolic basis for the isoleucine, pantothenate or methionine requirement of ilvG strains of Salmonella typhimurium
AUTHOR(S): Primerano, Donald A.; Burns, R. O.
CORPORATE SOURCE: Sch. Med., Duke Univ., Durham, NC, 27710, USA
SOURCE: Journal of Bacteriology (1982), 150(3), 1202-11
CODEN: JOBAAY; ISSN: 0021-9193
DOCUMENT TYPE: Journal
LANGUAGE: English

AB S. typhimurium Strain DU501, which was deficient in acetohydroxy acid synthase II (AHAS II) and possessed elevated levels of transaminase B and biosynthetic threonine deaminase, required isoleucine, methionine, or pantothenate for growth. This strain accumulated .alpha.-ketobutyrate and, to a lesser extent, .alpha.-aminobutyrate. .alpha.-Ketobutyrate was a competitive substrate for **ketopantoate hydroxymethyltransferase**, the 1st enzyme in pantothenate biosynthesis. This competition with the normal substrate, .alpha.-ketoisovalerate, limited the supply of pantothenate, which resulted in a requirement for methionine. Evidently, the ambivalent requirement for either pantothenate or methionine is related to a decrease in succinyl CoA, which is produced from pantothenate, and which is an obligatory precursor of methionine biosynthesis. The autointoxification of endogenously produced .alpha.-ketobutyrate could be mimicked in wild-type S. typhimurium by exogenously supplied .alpha.-ketobutyrate or salicylate, a known inhibitor of pantothenate biosynthesis. The accumulation of .alpha.-ketobutyrate was initiated by the inability of the residual AHAS activity provided by AHAS I to efficiently remove the .alpha.-ketobutyrate produced by biosynthetic threonine deaminase. The accumulation of .alpha.-ketobutyrate was amplified by the action of transaminase B, which decreased the isoleucine pool by catalyzing the formation of .alpha.-keto-.beta.-methylvalerate and aminobutyrate from isoleucine and .alpha.-ketobutyrate; this resulted in release of threonine deaminase from end product inhibition and unbridled prodn. of .alpha.-ketobutyrate. Isoleucine satisfied the auxotrophic requirement of

the AHAS II-deficient strain by curtailing the activity of threonine deaminase. Addnl. lines of evidence based on genetic and physiol. expts. are presented to support the basis for the autointoxification of strain DU501 as well as other nonpolarigenic ilvG mutant strains.

L22 ANSWER 18 OF 25 MEDLINE on STN DUPLICATE 8
ACCESSION NUMBER: 82142148 MEDLINE
DOCUMENT NUMBER: PubMed ID: 7037743
TITLE: Genetic and biochemical analyses of pantothenate biosynthesis in Escherichia coli and Salmonella typhimurium.
AUTHOR: Cronan J E Jr; Littel K J; Jackowski S
CONTRACT NUMBER: AI-15650 (NIAID)
SOURCE: Journal of bacteriology, (1982 Mar) 149 (3) 916-22. Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198205
ENTRY DATE: Entered STN: 19900317
Last Updated on STN: 19980206
Entered Medline: 19820521

AB Pantothenate (pan) auxotrophs of Escherichia coli K-12 and Salmonella typhimurium LT2 were characterized by enzymatic and genetic analyses. The panB mutants of both organisms and the pan-6 ("panA") mutant of S. typhimurium are deficient in **ketopantoate hydroxymethyltransferase**, whereas the panC mutants lack pantothenate synthetase. panD mutants of E. coli K-12 were previously shown to be deficient in aspartate 1-decarboxylase. All mutants showed only a single enzyme defect. The finding that the pan-6 mutant was deficient in **ketopantoate hydroxymethyltransferase** indicates that the genetic lesion is a panB allele. The pan-6 mutant therefore is deficient in the utilization of alpha-ketoisovalerate rather than the synthesis of alpha-ketoisovalerate, as originally proposed. The order of the pan genes of E. coli K-12 was determined by phage P1-mediated three-factor crosses. The clockwise order was found to be aceF panB panD panC tonA on the genetic map of E. coli K-12. The three-factor crosses were greatly facilitated by use of a closely linked Tn10 transposon as the outside marker. We also found that supplementation of E. coli K-12 auxotrophs with a high concentration of pantothenate or beta-alanine increased the intracellular coenzyme A level two- to threefold above the normal level. Supplementation with pantoate or ketopantoate resulted in smaller increases.

L22 ANSWER 19 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 9
ACCESSION NUMBER: 1980:422472 CAPLUS
DOCUMENT NUMBER: 93:22472
TITLE: Construction and characterization of Salmonella typhimurium strains that accumulate and excrete .alpha.- and .beta.-isopropylmalate
AUTHOR(S): Fultz, Patricia N.; Choung, Kyung K. L.; Kemper, Jost
CORPORATE SOURCE: Inst. Mol. Biol., Univ. Texas, Richardson, TX, 75080, USA
SOURCE: Journal of Bacteriology (1980), 142(2), 513-20
CODEN: JOBAAY; ISSN: 0021-9193
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Two S. typhimurium strains, which could be used as sources for the leucine biosynthetic intermediates .alpha.- and .beta.-isopropylmalate were constructed by a series of phage P22-mediated transductions. One strain, JK 527 [flr-19 leuA2010 .DELTA.(leuD-ara)798 fol-162], accumulated and excreted .alpha.-isopropylmalate, whereas the 2nd strain, JK553 (flr-19 leuA2010 leuB698), accumulated and excreted .alpha.- and .beta.-isopropylmalate. The yield of .alpha.-isopropylmalate isolated from the culture medium of JK527 was >5-fold the amt. obtained from a comparable vol. of medium in which Neurospora crassa strain FLR92-1-216 (normally used as the source for .alpha.- and .beta.-isopropylmalate) was grown. Not only was the yield greater, but S. typhimurium strains are much easier to handle and grow to satn. much faster than N. crassa strains. The combination of the 2 regulatory mutations flr-19, which

results in constitutive expression of the leucine operon, and leuA2010, which renders the 1st leucine-specific biosynthetic enzyme insensitive to feedback inhibition by leucine, generated limitations in the prodn. of valine and pantothenic acid. The efficient, irreversible, and unregulated conversion of .alpha.-ketoisovaleric acid into .alpha.-isopropylmalate (.alpha.-isopropylmalate synthetase Km for .alpha.-ketoisovaleric acid, 6 .times. 10-5M) severely restricted the amt. of .alpha.-ketoisovaleric acid available for conversion into valine and pantothenic acid (**ketopantoate hydroxymethyltransferase** Km for .alpha.-ketoisovaleric acid, 1.1 .times. 10-3M; transaminase B Km for .alpha.-ketoisovaleric acid, 2 .times. 10-3M).

L22 ANSWER 20 OF 25 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 1980:49668 BIOSIS
DOCUMENT NUMBER: PREV198018049668; BR18:49668
TITLE: PURIFICATION AND PROPERTIES OF KETO PANTOATE HYDROXYMETHYL TRANSFERASE.
AUTHOR(S): POWERS S G [Reprint author]; SNELL E E
CORPORATE SOURCE: DEP BIOCHEM, CORNELL UNIV MED COLL, NEW YORK, NY 10021, USA
SOURCE: Methods Enzymol., (1979) pp. P204-209. MCCORMICK, D. B. AND L. D. WRIGHT (ED.). METHODS IN ENZYMOLOGY, VOL. 62. VITAMINS AND COENZYMES, PART D. XXV+616P. ACADEMIC PRESS: NEW YORK, N.Y., USA; LONDON, ENGLAND. ILLUS.
Publisher: Series: Methods in Enzymology.
CODEN: MENZAU. ISSN: 0076-6879. ISBN: 0-12-181962-0.
DOCUMENT TYPE: Book; (Book Chapter)
FILE SEGMENT: BR
LANGUAGE: ENGLISH

L22 ANSWER 21 OF 25 MEDLINE on STN DUPLICATE 10

ACCESSION NUMBER: 79177790 MEDLINE
DOCUMENT NUMBER: PubMed ID: 374973
TITLE: Purification and properties of **ketopantoate hydroxymethyltransferase**.
AUTHOR: Powers S G; Snell E E
SOURCE: Methods in enzymology, (1979) 62 204-9.
Journal code: 0212271. ISSN: 0076-6879.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197907
ENTRY DATE: Entered STN: 19900315
Last Updated on STN: 19970203
Entered Medline: 19790725

L22 ANSWER 22 OF 25 MEDLINE on STN DUPLICATE 11

ACCESSION NUMBER: 76213236 MEDLINE
DOCUMENT NUMBER: PubMed ID: 6463
TITLE: **Ketopantoate hydroxymethyltransferase**.
II. Physical, catalytic, and regulatory properties.
AUTHOR: Powers S G; Snell E E
SOURCE: Journal of biological chemistry, (1976 Jun 25) 251 (12) 3786-93.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197608
ENTRY DATE: Entered STN: 19900313
Last Updated on STN: 19970203
Entered Medline: 19760823

AB Some physical, catalytic, and regulatory properties of **ketopantoate hydroxymethyltransferase** (5,10-methylenetetrahydrofolate: alpha-ketoisovalerate hydroxymethyltranferase) from Escherichia coli are described. This enzyme catalyzes the reversible synthesis of ketopantoate (Reaction 1), an essential precursor of pantothenic acid. (1) HC(CH3)2COCOO- + 5,10-methylene tetrahydrofolate f in equilibrium r HOCH2C(CH3)2COCOO- +

tetrahydrofolate It has a molecular weight by sedimentation equilibrium of 255,000, a sedimentation coefficient (S20,w) of 11 S, a partial specific volume of 0.74 ml/g, an isoelectric point of 4.4, and an absorbance, (see article), of 0.85. Polyacrylamide gel electrophoresis in sodium dodecyl sulfate and amino acid analyses give a subunit molecular weight of 27,000 and 25,700, respectively; both procedures indicate the presence of 10 identical subunits. The NH2-terminal sequence is Met-Tyr---. The enzyme is stable and active over a broad pH range, with an optimum from 7.0 to 7.6. It requires Mg2+ for activity; Mn2+, Co2+, Zn2+ are progressively less active. The enzyme is not inactivated by borohydride reduction in the presence of excess substrates, i.e. it is a Class II aldolase. Reaction 1f is partially inhibited by concentrations of formaldehyde (0.8 mM) and tetrahydrofolate (0.38 mM) below or near the Km values, apparent Km values are 0.18, 1.1 and 5.9 mM for tetrahydrofolate, alpha-ketoisovalerate, and formaldehyde, respectively. For Reaction 1r, apparent Km values are 0.16 and 0.18 mM, respectively, for ketopantoate and tetrahydrofolate, and the saturation curves for both substrates show positive cooperativity. Forward and reverse reactions occur at similar maximum velocities (Vmax approximately equal to 8 mumol of ketopantoate formed or decomposed per min per mg of enzyme at 37 degrees). Only 1-tetrahydrofolate is active in Reaction 1; d-tetrahydrofolate, folate, and methotrexate were neither active nor inhibitory. However, 1-tetrahydrofolate was effectively replaced with conjugates containing 1 to 6 additional glutamate residues; of these, tetrahydropterolpenta-, tetra-, and triglutamate were effective at lower concentrations than tetrahydrofolate itself; they were also the predominant conjugates of tetrahydrofolate present in E. coli. Alpha-Ketobutyrate, alpha-ketovalerate, and alpha-keto-beta-methylvalerate replaced alpha-ketoisovalerate as substrates; pyruvate was inactive as a substrate, but like isovalerate, 3-methyl-2-butanone and D- or L-valine, inhibited Reaction 1. the transferase has regulatory properties expected of an enzyme catalyzing the first committed step in a biosynthetic pathway. Pantoate (greater than or equal to 500 muM) and coenzyme A (above 1 mM) all inhibit; the Vmax is decreased, Km is increased, and the cooperativity for substrate (ketopantoate) is enhanced. Catalytic activity of the transferase is thus regulated by the products of the reaction path of which it is one component; transferase synthesis is not repressed by growth in the presence of pantothenate.

L22 ANSWER 23 OF 25 MEDLINE on STN DUPLICATE 12
ACCESSION NUMBER: 76213235 MEDLINE
DOCUMENT NUMBER: PubMed ID: 776976
TITLE: **Ketopantoate hydroxymethyltransferase.**
I. Purification and role in pantothenate biosynthesis.
AUTHOR: Teller J H; Powers S G; Snell E E
SOURCE: Journal of biological chemistry, (1976 Jun 25) 251 (12) 3780-5.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197608
ENTRY DATE: Entered STN: 19900313
Last Updated on STN: 19970203
Entered Medline: 19760823

AB A new enzyme, **ketopantoate hydroxymethyltransferase** (5,10-methylene tetrahydrofolate: alpha-ketoisovalerate hydroxymethyltransferase) has been purified 2400-fold to apparent homogeneity from Escherichia coli K12. It catalyzes the first committed step in pantothenate biosynthesis, the reversible formation of ketopantoate (2-keto-3,3-dimethyl-4-hydroxybutyrate) according to Equation 1, has low Km values for its substrates, and is abent (1) Methylenetetrahydrofolate + alpha-ketoisovalerate in equilibrium tetrahydrofolate + ketopantoate from a mutant of E. coli auxotrophic for ketopantoate. It thus appears to be the enzyme responsible for catalysis of ketopantoate formation in vivo. A previously described enzyme that catalyzes reaction 2 irreversible (McIntosh, E.N., Purko, M., and Wood, W.A. (1957) J. Biol. Chem. 228, 499-509) and does not require (2) HCHO + alpha-ketoisovalerate leads to ketopantoate tetrahydrofolate can be obtained free of **ketopantoate hydroxymethyltransferase**

and is present in equal amounts in ketopantoate auxotrophs and wild type E. coli. We conclude that the latter enzyme is not involved in the normal biosynthetic pathway leading to pantothenate; its function is unknown.

L22 ANSWER 24 OF 25 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1975:403701 CAPLUS
DOCUMENT NUMBER: 83:3701
TITLE: Selective, reversible binding of biomolecules to adsorbents
INVENTOR(S): Shaltiel, Shmuel
PATENT ASSIGNEE(S): Yeda Research and Development Co. Ltd.
SOURCE: Ger. Offen., 17 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2319495	A1	19750123	DE 1973-2319495	19730417
DE 2319495	C2	19850110		
US 3917527	A	19751104	US 1973-360303	19730514
PRIORITY APPLN. INFO.:			DE 1973-2319495	19730417

AB A method is described for the selective and reversible binding of biomol. compds. on adsorbents. Biomols., such as peptides, vitamins, hormones, lipids, enzymes, proteins membranes, or cells, can be sepd. by passage through small chromatog. columns. The adsorbents in the columns consist of agarose coated with a homologous series of hydrocarbons ranging from C1-C10. This method is said to be an improvement over the affinity chromatog. method of Cuatrecasas and Anfinsen (1972) and over the immunospecific purifn. method of Campbell, Luescher, and Lerman (1951). Macromols. which have no affinity for the ligand pass rapidly through the column; mols. having affinity for the ligand will be delayed. The water-insoluble carrier used was agarose; the covalent binding groups include -NH2, -SO3H, -CONH2, -PO4H2, -OH, -SH, imidazole, and phenolic groups. The hydrocarbon residues consisted of alkyl-, aryl-, aralkyl-, alkylaryl-, or alkylaralkyl residues. H was the end group. The method was used for the partial purifn. of bacterial enzymes, such as histidinol phosphate aminotransferase (46-fold) on C6-, histidine decarboxylase (>10-fold) on C10-, ornithine decarboxylase (5- to 10-fold) on C5-, restriction endonuclease (>10-fold) on C2-, glutamine synthetase (6-fold) on C5- or C6-, ATP: glutamine synthetase adenylyltransferase (6-fold) on C5- or C6-, and **ketopantoate hydroxymethyltransferase** (10-fold) on C4-coated columns.

L22 ANSWER 25 OF 25 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 74:231514 SCISEARCH
THE GENUINE ARTICLE: S9698
TITLE: **KETOPANTOATE HYDROXYMETHYLTRANSFERASE** FROM ESCHERICHIA-COLI-K12
AUTHOR: POWERS S G (Reprint); SNELL E E
CORPORATE SOURCE: UNIV CALIF, DEPT BIOCHEM, BERKELEY, CA, 00000
COUNTRY OF AUTHOR: USA
SOURCE: FEDERATION PROCEEDINGS, (1974) Vol. 33, No. 5, pp. 1377.
DOCUMENT TYPE: Conference; Journal
LANGUAGE: ENGLISH
REFERENCE COUNT: 1

=> s
ENTER LOGIC EXPRESSION, QUERY NAME, OR (END):end
SEARCH ENDED BY USER

=> s e(1w)c(2w)2.1.2.11
L23 0 FILE MEDLINE
L24 1 FILE CAPLUS
L25 0 FILE SCISEARCH
L26 0 FILE LIFESCI
L27 0 FILE BIOSIS

```
L28           0 FILE EMBASE

TOTAL FOR ALL FILES
L29           1 E(1W)C(2W)2.1.2.11

=> d abs

L29  ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
AB   This invention provides methods and systems to identify enzymes that act
     as enzyme-catalyzed therapeutic activators and the enzymes identified by
     these methods.  Also provided by this invention are compds. activated by
     the enzymes as well as compns. contg. these compds.


=> d ibib abs

L29  ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2002:89878  CAPLUS
DOCUMENT NUMBER:          136:156403
TITLE:                    Methods for identifying therapeutic targets for
                          treating infectious disease
INVENTOR(S):              Shepard, Michael H.; Lackey, David B.; Cathers, Brian
                          E.; Sergeeva, Maria V.
PATENT ASSIGNEE(S):       Newbiotics, Inc., USA
SOURCE:                   PCT Int. Appl., 503 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.          DATE
     ---------------      ----   --------    --------------------     --------
     WO 2002007780         A2    20020131    WO 2001-US23095          20010720
     WO 2002007780         A3    20030220
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM,
             HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,
             LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO,
             RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ,
             VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     US 2003130179         A1    20030710    US 2001-910345           20010720
PRIORITY APPLN. INFO.:                     US 2000-219598P      P    20000720
                                           US 2000-244953P      P    20001101
                                           US 2001-276728P      P    20010316
AB   This invention provides methods and systems to identify enzymes that act
     as enzyme-catalyzed therapeutic activators and the enzymes identified by
     these methods.  Also provided by this invention are compds. activated by
     the enzymes as well as compns. contg. these compds.


=> s ec 2.1.2.11
L30          13 FILE MEDLINE
L31           1 FILE CAPLUS
L32           0 FILE SCISEARCH
L33           0 FILE LIFESCI
L34           6 FILE BIOSIS
L35           0 FILE EMBASE

TOTAL FOR ALL FILES
L36          20 EC 2.1.2.11

=> s ec 2.1.2.11 or e. c. 2.1.2.11
L37          13 FILE MEDLINE
L38           2 FILE CAPLUS
L39           0 FILE SCISEARCH
L40           0 FILE LIFESCI
L41           6 FILE BIOSIS
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L42           0 FILE EMBASE

TOTAL FOR ALL FILES
L43          21 EC 2.1.2.11 OR E. C. 2.1.2.11

=> s l43 not 2002-2004/py
L44           6 FILE MEDLINE
L45           1 FILE CAPLUS
L46           0 FILE SCISEARCH
L47           0 FILE LIFESCI
L48           1 FILE BIOSIS
L49           0 FILE EMBASE

TOTAL FOR ALL FILES
L50           8 L43 NOT 2002-2004/PY

=> dup rem l50
PROCESSING COMPLETED FOR L50
L51           6 DUP REM L50 (2 DUPLICATES REMOVED)

=> d ibib abs

L51  ANSWER 1 OF 6     MEDLINE on STN
ACCESSION NUMBER:   1999240418     MEDLINE
DOCUMENT NUMBER:    PubMed ID: 10223988
TITLE:              D-Pantothenate synthesis in Corynebacterium glutamicum and
                    use of panBC and genes encoding L-valine synthesis for
                    D-pantothenate overproduction.
AUTHOR:             Sahm H; Eggeling L
CORPORATE SOURCE:   Institut fur Biotechnologie, Forschungszentrum Julich GmbH,
                    52425 Julich, Germany.
SOURCE:             Applied and environmental microbiology, (1999 May) 65 (5)
                    1973-9.
                    Journal code: 7605801. ISSN: 0099-2240.
PUB. COUNTRY:       United States
DOCUMENT TYPE:      Journal; Article; (JOURNAL ARTICLE)
LANGUAGE:           English
FILE SEGMENT:       Priority Journals
OTHER SOURCE:       GENBANK-X96580
ENTRY MONTH:        199907
ENTRY DATE:         Entered STN: 19990714
                    Last Updated on STN: 19990714
                    Entered Medline: 19990701
AB   D-Pantothenate is synthesized via four enzymes from ketoisovalerate, which
     is an intermediate of branched-chain amino acid synthesis. We quantified
     three of these enzyme activities in Corynebacterium glutamicum and
     determined specific activities ranging from 0.00014 to 0.001 micromol/min
     mg (protein)-1. The genes encoding the ketopantoatehydroxymethyl
     transferase and the pantothenate synthetase were cloned, sequenced, and
     functionally characterized. These studies suggest that panBC constitutes
     an operon. By using panC, an assay system was developed to quantify
     D-pantothenate. The wild type of C. glutamicum was found to accumulate 9
     micrograms of this vitamin per liter. A strain was constructed (i) to
     abolish L-isoleucine synthesis, (ii) to result in increased
     ketoisovalerate formation, and (iii) to enable its further conversion to
     D-pantothenate. The best resulting strain has ilvA deleted from its
     chromosome and has two plasmids to overexpress genes of ketoisovalerate
     (ilvBNCD) and D-pantothenate (panBC) synthesis. With this strain a
     D-pantothenate accumulation of up to 1 g/liter is achieved, which is a
     10(5)-fold increase in concentration compared to that of the original
     wild-type strain. From the series of strains analyzed it follows that an
     increased ketoisovalerate availability is mandatory to direct the
     metabolite flux into the D-pantothenate-specific part of the pathway and
     that the availability of beta-alanine is essential for D-pantothenate
     formation.


=> d ibib abs 2-6

L51  ANSWER 2 OF 6     MEDLINE on STN                    DUPLICATE 1
ACCESSION NUMBER:   1999430867     MEDLINE
```

DOCUMENT NUMBER: PubMed ID: 10503542
TITLE: The Aspergillus nidulans panB gene encodes ketopantoate hydroxymethyltransferase, required for biosynthesis of pantothenate and Coenzyme A.
AUTHOR: Kurtov D; Kinghorn J R; Unkles S E
CORPORATE SOURCE: Department of Microbiology, Monash University, Clayton, Victoria, Australia.
SOURCE: Molecular & general genetics : MGG, (1999 Aug) 262 (1) 115-20.
Journal code: 0125036. ISSN: 0026-8925.
PUB. COUNTRY: GERMANY: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AF134703
ENTRY MONTH: 199910
ENTRY DATE: Entered STN: 19991101
Last Updated on STN: 19991101
Entered Medline: 19991018

AB Ketopantoate hydroxymethyltransferase, which is encoded by the panB gene in the lower eukaryote Aspergillus nidulans, is essential for the biosynthesis of coenzyme A, while the pathway intermediate 4'-phosphopantetheine is required for penicillin production. Ketopantoate hydroxymethyltransferase could also serve as a target for anti-fungal drugs, since it is not present in mammals. Clones of panB were identified by complementation of the corresponding mutant, and the DNA sequence of the gene was determined. The fungal panB gene encodes a predicted protein of molecular mass 37.7 kDa, containing two short sequence motifs, LeuValGlyAspSer and GlyIleGlyAlaGly, that are completely conserved between prokaryotic and eukaryotic homologues. The mutation panB100 was found to result in deletion of Gly-168, the last glycine within the latter conserved motif. Analysis by gel filtration suggests that the fungal PanB protein can be expressed in Escherichia coli as an active octameric enzyme. The panB transcript is present in low abundance and, most probably, a small increase in transcript levels occurs in the absence of exogenous pantothenate.

L51 ANSWER 3 OF 6 MEDLINE on STN
ACCESSION NUMBER: 96434511 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8837478
TITLE: Characterization and sequence of the Escherichia coli panBCD gene cluster.
AUTHOR: Merkel W K; Nichols B P
CORPORATE SOURCE: Department of Biological Sciences, University of Illinois at Chicago 60607, USA.
CONTRACT NUMBER: AI25106 (NIAID)
GM44199 (NIGMS)
SOURCE: FEMS microbiology letters, (1996 Oct 1) 143 (2-3) 247-52.
Journal code: 7705721. ISSN: 0378-1097.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199612
ENTRY DATE: Entered STN: 19970128
Last Updated on STN: 19980206
Entered Medline: 19961210

AB A 4589 bp DNA segment containing the Escherichia coli panBCD gene cluster was sequenced, and found to contain 6 complete open reading frames. panB, panC, and panD were identified by subcloning and insertional mutagenesis. The orientation of panD was also confirmed by orientation-specific expression of asparate-1-decarboxylase. panB and panC lie adjacent to one another, but are separated from panD by orf3, which is oriented in the opposite direction. Interruptions in the remaining open reading frames did not affect growth on glucose-minimal medium. No significant similarity to sequences in databases was found for orf1 and orf2. Orf3 contained extensive similarity to reading frames defined by E. coli yjiP, yjiQ, yhgA, and yafD. The function of these amino acid sequences is as yet undefined.

L51 ANSWER 4 OF 6 MEDLINE on STN DUPLICATE 2

ACCESSION NUMBER: 93209959 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8096212
TITLE: Cloning and sequencing of the Escherichia coli panB gene, which encodes ketopantoate hydroxymethyltransferase, and overexpression of the enzyme.
AUTHOR: Jones C E; Brook J M; Buck D; Abell C; Smith A G
CORPORATE SOURCE: Department of Plant Sciences, University of Cambridge, England.
SOURCE: Journal of bacteriology, (1993 Apr) 175 (7) 2125-30. Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-X65538
ENTRY MONTH: 199304
ENTRY DATE: Entered STN: 19930514
Last Updated on STN: 19950206
Entered Medline: 19930423

AB The panB gene from Escherichia coli, encoding the first enzyme of the pantothenate biosynthesis pathway, ketopantoate hydroxymethyltransferase (KPHMT), has been isolated by functional complementation of a panB mutant strain with an E. coli genomic library. The gene is 792 bp long, encoding a protein of 264 amino acids with a predicted M(r) of 28,179. The identity of the gene product as ketopantoate hydroxymethyltransferase was confirmed by purification of the enzyme protein, which was overexpressed approximately 50-fold in the mutant harboring the gene on a high-copy-number plasmid. The N-terminal amino acid sequence of the purified protein was found to be identical to that predicted from the gene sequence, as was its mass, determined by electrospray mass spectrometry. Upstream of the panB gene is an incomplete open reading frame encoding a protein of 220 amino acids, which shares sequence similarity to fimbrial precursor proteins from other bacteria. Northern (RNA) analysis showed that the panB gene is likely to be cotranscribed with at least one other gene but that this is not the putative fimbrial protein, since no transcripts for this gene could be detected.

L51 ANSWER 5 OF 6 MEDLINE on STN
ACCESSION NUMBER: 91286213 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1844812
TITLE: Isolation and characterization of Bacillus subtilis mutants blocked in the synthesis of pantothenic acid.
AUTHOR: Baigori M; Grau R; Morbidoni H R; de Mendoza D
CORPORATE SOURCE: Departamento de Microbiologia, Facultad de Ciencias Bioquimicas y Farmaceuticas, Universidad Nacional de Rosario, Republica Argentina.
SOURCE: Journal of bacteriology, (1991 Jul) 173 (13) 4240-2. Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199108
ENTRY DATE: Entered STN: 19910825
Last Updated on STN: 19910825
Entered Medline: 19910802

AB We have produced and characterized by physiological and enzymatic analyses pantothenate (pan) auxotrophs of Bacillus subtilis. panB auxotrophs are deficient in ketopantoate hydroxymethyltransferase, whereas panE mutants lack ketopantoic acid reductase. The pan mutations were mapped by phage PBS1-mediated two-factor crosses and found to be located in the interval purE-tre of the genetic map of B. subtilis.

L51 ANSWER 6 OF 6 MEDLINE on STN
ACCESSION NUMBER: 82142148 MEDLINE
DOCUMENT NUMBER: PubMed ID: 7037743
TITLE: Genetic and biochemical analyses of pantothenate biosynthesis in Escherichia coli and Salmonella typhimurium.
AUTHOR: Cronan J E Jr; Littel K J; Jackowski S
CONTRACT NUMBER: AI-15650 (NIAID)

SOURCE: Journal of bacteriology, (1982 Mar) 149 (3) 916-22.
Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198205
ENTRY DATE: Entered STN: 19900317
Last Updated on STN: 19980206
Entered Medline: 19820521

AB Pantothenate (pan) auxotrophs of Escherichia coli K-12 and Salmonella typhimurium LT2 were characterized by enzymatic and genetic analyses. The panB mutants of both organisms and the pan-6 ("panA") mutant of S. typhimurium are deficient in ketopantoate hydroxymethyltransferase, whereas the panC mutants lack pantothenate synthetase. panD mutants of E. coli K-12 were previously shown to be deficient in aspartate 1-decarboxylase. All mutants showed only a single enzyme defect. The finding that the pan-6 mutant was deficient in ketopantoate hydroxymethyltransferase indicates that the genetic lesion is a panB allele. The pan-6 mutant therefore is deficient in the utilization of alpha-ketoisovalerate rather than the synthesis of alpha-ketoisovalerate, as originally proposed. The order of the pan genes of E. coli K-12 was determined by phage P1-mediated three-factor crosses. The clockwise order was found to be aceF panB panD panC tonA on the genetic map of E. coli K-12. The three-factor crosses were greatly facilitated by use of a closely linked Tn10 transposon as the outside marker. We also found that supplementation of E. coli K-12 auxotrophs with a high concentration of pantothenate or beta-alanine increased the intracellular coenzyme A level two- to threefold above the normal level. Supplementation with pantoate or ketopantoate resulted in smaller increases.

=> log y